Hobbies WEEKLY

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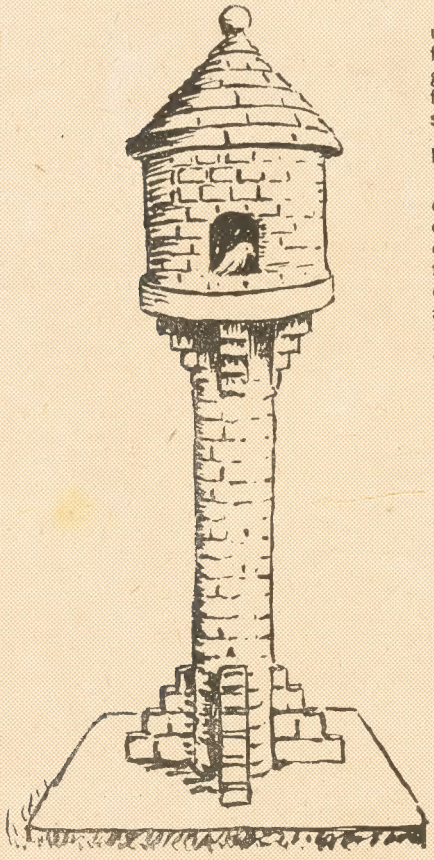
February 15th, 1950 Price Fourpence Vol. 109 No. 2833

# CONCRETE
## FOR USE AND ORNAMENT

IN this uncertain climate the amateur gardener has all too little time for jobs essential to the proper cultivation of his 'blessed plot' without having to waste precious hours on jobs that need not be done at all.

The weeding of gravel paths, for example, is a task no gardener loves, and it must be done three or four times, at least, every season. There is nothing more unsightly than those long-tentacled tufts of green that not only disfigure the path but burrow into the subsoil, and when extracted leave the golden surface pitted with what look like miniature bomb-craters.



The alternative to hand-weeding is to use a weed-killer—and as weeds usually flourish best at the sides of the path, the grass borders are likely to suffer as well from the application of poisonous solutions or powders.

### Paths

So why tolerate gravel paths? Concrete ones can be equally attractive, and once they are down they need practically no attention. Concrete is clean and firm in all weathers. The warm golden colour of gravel is admittedly more attractive than the cold greyness of 'neat' concrete, but this objection is easily overcome by the admixture of powder colour with the concrete 'mix' used on the surface.

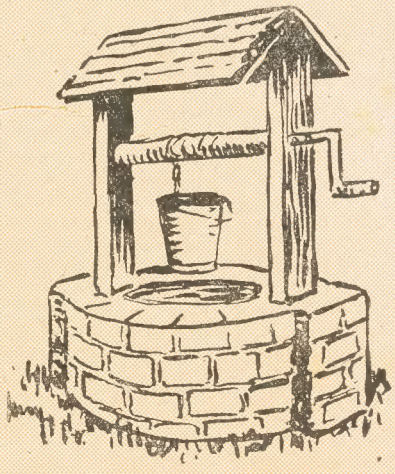
A concrete path should be from 3ins. to 4ins. thick, and if space allows should be at least 3ft. wide. The site should be excavated to such a depth as to allow the path when finished to be 1in. below the level of the bordering grass. This makes it easy to keep the grass edges trim and neat. The soil foundation should then be well rammed down, and a sprinkling of broken brick, clinker, or stones raked from the kitchen garden should be incorporated.

### Proportions of 'Mix'

The first layer of concrete should be made of a 'mix' consisting of one part of cement to seven of hoggin—the kind of rough, unsifted gravel that is the raw material excavated from the pit. The proportion of cement to gravel may seem small, but it is quite sufficient.

Mix the cement and hoggin very thoroughly before adding water, and do not make too big a 'mix' at one go. It is surprising how heavy and sticky this stuff can be when water has been added. When thoroughly mixed into a compact, round heap, make a round 'crater' in the middle with the spade. Add water a little at a time, turning the edges of the heap over into the centre after each watering. Do not add too much water, but just sufficient to eliminate all dryness from the cement. Over-watering causes the cement to sink down to the bottom when laid, leaving the surface with nothing to bind it together.

For levelling out the 'mix' one needs a strong 'float'. One can easily be made with a flat oblong of hardwood about



15ins. by 4ins., with a hand-grip of wood nailed or screwed on to the centre of the back.

To ensure that the path shall be of a uniform thickness, small wooden pegs should be driven along the middle of the path foundation at intervals of 1yd. or so, due allowance being made so that the finished path shall be 1in. higher in the middle than at the sides. The rougher the surface of this first layer the better, as it affords a more efficient 'key' for the smooth top layer.

### The Topping

This latter calls for a 'mix' consisting of one part of cement to either two or three of clean, sharp sand. The three-to-one mix gives the better non-slip finish, and in any case it should be mixed rather wetter than the under-layer, to permit of easy spreading. But it should never be watered to the point of sloppiness. It should be pressed, with the float, well into the crevices of the under-layer, and its average thickness need be no more than ½in.

A warm, portland-stone-like effect can be achieved by mixing yellow ochre powder with the dry cement and sand. One part of colour to ten of cement is best. A reddish-pink colour can be obtained by similarly adding red oxide powder. This is more intense than yellow ochre and only about a quarter as much of the red is needed.

### A 'Crazy' Path

To give a crazy or rectangular flagged effect to the path, either draw the point of a stick across the wet concrete 'freehand' according to your fancy, or place a short length of planking lightly on the surface and use it as a straight-edge for the lines.

Never attempt to lay concrete in frosty weather; if night frosts are at all likely, newly-laid concrete should be completely covered by sacking with an ample overlap and no gaps.

Concrete ornaments can add greatly to the interest of a garden—and one can get a lot of fun in the making of them.

The ready-made stuff always has a mass-produced look—and there is always the risk, if you buy an ornament, that you will find its twin in the garden next door.

### Concrete Bird House

The central feature in the writer's own garden is a concrete bird-house which has been a constant delight for over 20 years. Now weather-beaten and lichen-encrusted, no stone ornament could be more handsome, and nearly every spring a pair of robins takes possession and rears a family. The bird-house is about 7ft. high. The rectangular base is about 4ins. thick, and when it was laid a 7ft. length of old gas barrel was set upright in the centre to form a core for the main pillar.

This pillar was built up with little home-made, wedge-shaped concrete bricks to make the pillar circular in section. The round platform which serves as the floor of the 'living accommodation' was moulded in the wooden frame of an old garden sieve, a hole being left in the middle to admit the end of the gas barrel. A cylinder of expanded metal lathing (a netting-like material obtainable from ironmongers and builders' merchants) was then made, and a 'mix' of cement and sand 1in. thick trowelled on—the cylinder having first been lines with cardboard and filled with soil to prevent the 'mix' from falling through. When it had set, it was placed on top of the round platform and cemented in place.

The roof was the next item; for this a cone of expanded metal lathing was made and dealt with in similar fashion to the cylinder. The central pillar was then given four buttresses at its base, and similar buttresses were placed under the round platform. These were tied in position with string until the cement had set. When the general structure was complete the roof was given another coat of cement and sand mixed with red oxide, and then marked out to resemble small tiles. The circular wall of the house was given a yellow ochre 'mix' which, when set, was marked to resemble small bricks, which were then pointed in green. The central pillar was similarly dealt with.

### A Garden Seat

Another item that is both useful and ornamental is a concrete garden bench 6ft. long. This is about 3ins. thick and was cast in a wooden frame made of odd bits of timber. This frame was laid on a concrete path on which several thicknesses of brown paper had been placed.

First, into the frame went all kinds of old iron—including three or four old croquet hoops straightened out from their normal 'hairpin' shape, and odd bits of wire netting running through the whole length. Reinforcement of this kind is essential for a seat. The two legs were similarly cast. The seat is enormously strong; as a test five people have stood on it.

### Well-head or Sundial

The writer has also built in concrete the 'well-head' shown in the sketch. Hollowed out 1yd. or so into the ground and lined with concrete, it is fed with rain-water from the roof of a near-by summer-house, and being close to the kitchen garden is very useful for replenishing the water-can.

Other features such as a sun-dial pedestal and one or two concrete vases suitably placed all help to enhance the interest of the garden and are particularly appreciated in winter when there is so little else to look at.

The great point about making these ornaments is that they call for so little in the way of equipment, and one can utilize in their making all kinds of otherwise useless junk. In fact, with a load of sand and a few bags of cement one can recapture the joys of the mud-pie and sand-castle days of one's youth—with the additional joy of having something concrete to show for one's efforts!

# The Editor Judges!

*THE good-looking fellow in the picture is of the Editor in the role of judging! He helped the Editor of the Boy's Own Paper, and Major T. H. MacArthur in trying to sift the best in a display of handwork organized last year by the welfare section of the Army Cadet Force Association. The task was no easy one, for the standard was actually higher than the previous year. The subjects covered models, toys, home furniture, etc., and some of the entries were really delightful, both as works of beauty and in their splendid finish. The first prize had to tie between an inlaid walnut coffee table and a pair of sturdy (also inlaid) book ends. The entries included model tractors, lamp standards, fruit stands, toy duck, bread board and a wide range of other utility articles. Major S. C. White, M.B.E. who was responsible for the organisation is certainly to be congratulated on the enthusiasm and ability he has promoted in the Association. The names of the actual winners were:—*

*Household Articles—Cadet D. Gateland, Cadet Hackwood, Cadet Woodhouse, L/Cpl. Cosgrove, Cadet Simmons, Cadet Blitz, Cadet Ridley, L/Cpl. D. Marshall, Cadet Coleby, Cadet G. Bassingthwaighte, Cpl. R. Storey, Cadet Muff. Toys — Cadet P. Digby, Cpl. P. W. Buckley, Cadet John E. Baylis. Textiles—Cadet William Handshaw, Lance-Bombardier R. Theobald, Cadet R. E. Lewes.*

For store cupboards, linen closets or dark places fit this

# AUTOMATIC DOOR LIGHT

FOR those who prefer to make, rather than buy, this simple yet effective device, which when placed in circuit with an electric light point, eliminates the need for a manual switch.

Being fitted to the door jamb as soon as the door is opened the plunger, held in the closed position by the inside face of the door when closed, is released. This allows the metal disc, actuated by the spring, to come into contact with the two metal strips and so complete the electrical circuit necessary to light the bulb.

The action of closing the door has the reverse effect. The inside face of the door depresses the plunger and spring and so extinguishes the light. From its action it will be seen that the risk of fire from spent matches dropped among the contents of most store cupboards situated under the stairs, is eliminated.

### For Clothes Cupboards

This device can be equally beneficial when fitted to a clothes closet. Its use makes the selection of the right coat or hat certain and prevents the need so often experienced of taking out practically the whole contents before the article that is wanted at that particular time can be found.

Measuring approximately 1½ins. square it requires little or no engineering skill to make, beyond drilling and the soldering of a metal disc on to a tube.

The diagrammatic sketch shown in Fig. 1 gives the reader a complete picture of the assembled parts, consisting of a piece of ⅜in. tube ¾in. in length (C). Plugs (A) made from dowelling of the same thickness as the tube, are necessary to eliminate the possibility of an electrical shock which would occur if the metal tube was extended to protrude at either end.

A washer is of ample section (B) ¾in. in diameter and having an aperture of ⅜in. to receive the tube (C). A smaller washer (D) is also necessary to form the base against which the spring (E) operates, while two metal strips—in length and shaped so as not to foul the tube (C) act as contacts which complete the electrical circuit when the washer (B) is held against them by the spring (E).

### Box Casing

These items are housed in a wooden case which, after three holes have been drilled, is cut in half. The centre hole is drilled with a ⅜in. bit. The other two ½in. either side of the centre hole are necessary to take the 4 B.A. bolts which, when the parts are assembled, hold them and the casing firmly.

To construct the piece of mechanism obtain a piece of well-seasoned timber 2ins. square. Measure off the centre and drill a ⅜in. hole. In line with this ½in. on either side, drill a hole large enough to take the 4 B.A. bolts.

Now cut the block in half at right angles to the holes drilled. Select the half that is to receive the metal contacts (B.1) and drill a hole in each through which the 4 B.A. bolts pass. Next increase the ⅜in. hole to ¾in. to a depth of ½in., removing any swarf by means of fine glasspaper.

After cleaning, solder the disc to the tube at approximately the centre (see Fig. 2). It is important that this disc is at right angles to the tube itself to ensure a good contact is made with the two metal strips (B.1). These should next be sunk in to their depth, either side of the ¾in. hole. Cut dowel ends ¾in. in length and trim a ¼in. to fit in the ends of the tube.

### Assembling

Place the spring over the tube so it rests against the make and break washer soldered to the tube. Add the smaller washer which, when placed in the ¾in. hole, will rest against the base of the housing. Depress the plunger and hold in position while the two metal strips are placed in position—making certain that these do not foul the metal plunger. Place the second half of the housing over the plunger and insert the two 4 B.A. bolts and secure by nuts.

The plunger can now be released, when it should return to the 'on' position due to the spring's action. If any sign of sticking is observed take down and make certain that the tube moves easily in each half of the housing.

### To Test

In order to make a test obtain a pocket lamp battery and bulb holder, fix a lead from battery to one of the 4 B.A. bolts which act as terminals. From the other, bolt a lead to one point on the bulb holder. The other point on the bulb should be connected by a lead to the other side of the battery. This will then complete the electrical circuit and as soon as a bulb is inserted it should light.

Now depress the plunger and the light will go out. Repeat this several times ensuring that the switch operates satisfactorily before inserting the switch in the light circuit in place of the usual tumbler switch.

To fix to the inside of the door, drill two small holes to take wood screws of a slender size (Fig. 3). A certain amount of experiment will be necessary to ensure the correct position in relation to the inside of the door when it is closed. The plunger should protrude to a distance of no more than ¼in.

When satisfied this position is obtained, fill in with sealing wax the countersunk heads of the 4 B.A. bolts which, due to the fact that they pass through the contacts, are alive. If touched in their uncovered state a shock will result.

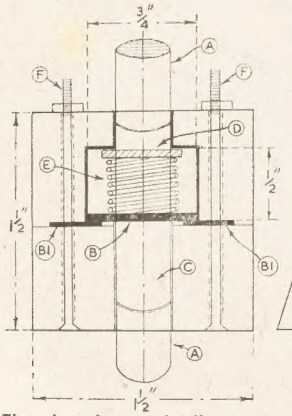



Fig. 1 — Lettered diagram section

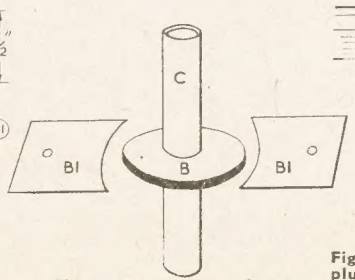



Fig. 2 — Tube and disc fitting

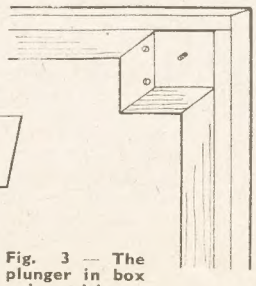


Fig. 3 — The plunger in box in position

# How to convert a tinplate model railway into an ELECTRIFIED TRACK

BROADLY, there are two entirely different ways in which the amateur model railwaymen can convert his tinplate track into electric track, suitable for the running of Hornby and other electric locomotives.

In the first—and easiest method, the original tinplate rails are screwed down, through small holes through the end sleepers of each rail-length to a substantial baseboard to which the electric rail is subsequently added by means of being mounted by soldering to the heads of screws driven into the baseboard between the running-rails.

In the second method, small metal clips are used. These are wrapped round each sleeper, being insulated from the latter by a previous wrapping of thin card. To these clips the 'third rail' of copper wire is soldered, each rail-length being treated individually in this way. The ends of the 'third rail' are soldered or twisted together (the twists pointing downwards) to form a continuous electrified line.

### Disadvantages

Exploring the possibilities of each of these methods, we find that the outstanding point against the first is that it insists that the layout is permanent, or at least semi-permanent, and this entails a definite space, set aside for the use of the railway, which is not always possible in smaller houses and flats.

While there is no gainsaying the fact that a tinplate line electrified in this way is an absolute success from an operational point of view, it is not always productive of domestic felicity in smaller abodes, where every square foot of space is needed for household purposes.

### Equal in Cost

The second method is, of course, infinitely more complicated to carry out, and, though the cost of both systems are about equal, does not give quite such trouble-free running, due to the number of joints in the live rail, each of which can be the source of loss of power on the part of the locomotives, due to indifferent electrical contact.

Taking the first method. The lengths of tinplate rail are first drilled through the centre of each end sleeper with a $\frac{1}{8}$in. hole, and are then secured to the baseboard in the proper configuration to produce the final layout design by means of brass $\frac{5}{8}$in. round-headed woodscrews.

### The Lay-out

Great care should be taken over the design of the layout, as once the rails are secured and electrified, any alterations will be the cause of re-laying and re-electrifying over the re-designed portions of track. A little extra time spent with a pencil and paper will be rewarded by the satisfaction of running on a well-designed layout which has been well-laid once and for all.

The material used for the third rail is tinned copper wire of No. 16 S.W.G., which is obtainable at almost any radio repair shop, and which is soldered into the screwdriver slots in the top of the wood-screws, which should be suitably widened to receive it by means of a triangular file.

Before use, the wire should be cut into 12ft. lengths and stretched by fixing one end in the vice (or twisting it round a door-handle) and firmly pulling from the other end with a pair of pliers until it has been stretched about 6ins. After stretching, the 12ft. length should be cut into 3ft. pieces, taking care to preserve them free from kinks. In this state they will be found to solder easily to the screw-heads on either straight or curved track.

### Good Contact

After laying, the ends of each length should be bent down slightly, so the collector-shoe of the locomotive does not catch up as it passes from one length to another. The ends must, however, be in good electrical contact, and this is achieved by soldering short lengths of 'flex' wire to each extreme (bent-down) end, by means of which the lengths may be joined into one electrical whole, i.e., in metallic connection throughout the whole layout.

Coming now to the second electrification scheme. It will be found best to produce twice as many metal clips as there are lengths of rail, making them from tin-plate obtained from old cocoa or 'Ovaltine' tins, these being first cut into $\frac{1}{2}$in. wide strips and finally into pieces about $\frac{1}{2}$in. wide by 2ins. long, each piece making one clip.

In use, each piece is first bent into a sharply angled inverted 'U', to the top of which the third rail will be eventually soldered. The arms of the 'U' are then bent inwards to grip round the tinplate sleepers, its ends wrapping right round the latter and being strongly nipped up underneath the sleeper.

### Wrapped Sleepers

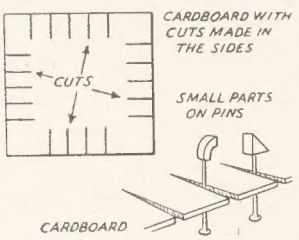
Before this wrapping-round process is commenced, however, pieces of thin cardboard (such as old post-cards) must be cut and also wrapped around each sleeper so that the metal clips are not actually touching the sleeper. After placing the card insulators, the clips must be gripped in place, taking great care not to pierce the cardboard in the process.

As each rail-length is treated separately by this method, it is essential that 'flex' ends are soldered to each end of each third rail, and its ends bared, so that they may be twisted readily together to form a continuous rail.

(*Continued foot of page 310*)

## Painting Small Parts

WHEN small parts of models are stuck on pins and painted, one is a little perplexed how they can be easily dried. Procure a large piece of cardboard and cut a frill round the edges with scissors. The cuts can be 2ins. apart, 2ins. deep as shown. The pins with the parts painted can then be inserted in these cuts, thereby keeping them free from contact with any surfaces. The card can be rested on a couple of books or small box.




## Nailing Butt Joints

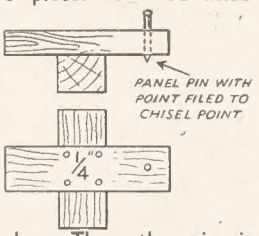
WHEN nailing a butt joint, it is a good tip to bend the point of the nail slightly at the end. This will cause the nail to follow a curved course, and thus ensure a good grip.

## Fretwork Hint

WHEN making an overlay, sometimes thin lines have to be cut for bits of trees, etc. If the model is darkly stained, the lines do not show up. To remedy this, run french chalk or flour in the lines. They will then show up.

## A Repetition Gauge

FOR repetition work it is handy to make fixed marking gauges. These consist of two pieces of wood fixed together with panel pins or fretwork nails. The position of the marking point is marked accurately, and a panel pin driven through. Then the pin is removed and driven through from the other side, the projecting point being then filed to a chisel shape (see sketch). The size of the pieces of wood will, of course, depend upon the size of the gauge to be made.



Patterns on page 319 for the parts of this amusing

# TROTTING TOY

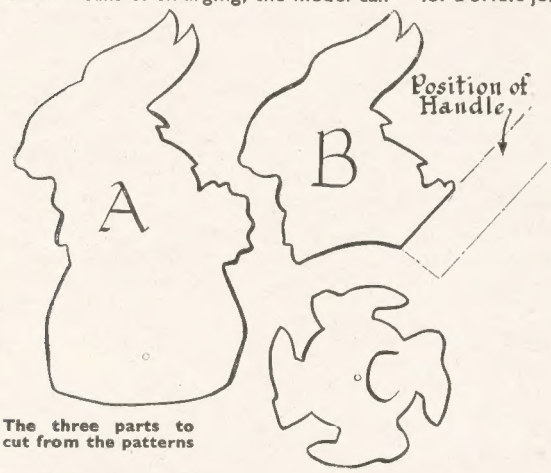
DESPITE the most ingenious and complicated mechanical toys that come on the market, some grand old toys never grow old. The trotting toy is one of these, and on account of the numerous requests we get, we are publishing a full-size pattern, which appears on the inside back cover, page 319 of this issue.

In order to get the maximum size pattern, we have superimposed the parts one on another, and these have to be separated and traced off by the reader. But this is quite straightforward. As can be seen from Fig. 2, there are three shapes to cut, of which one is to be cut in duplicate, making four pieces in all, apart from the handle.

### Outline Shape

First, there is the complete outer shape of the rabbit, less, of course, the feet. It is possible to use $\frac{3}{16}$in. plywood for these, though thicker wood is recommended if available (A). Then there is shape (B) which is really the top part of (A) repeated. One of these parts is required, for preference, $\frac{3}{8}$in. thick. The wheel part (C) must be at least $\frac{1}{4}$in. thick. If part (B) is $\frac{3}{8}$in. thick, and is sandwiched between parts (A), wheel (C), which goes in the recess thus formed, has some play.

If the reader has a pantograph, or some other means of enlarging, the model can




**The three parts to cut from the patterns**

be made about half as large again as printed. It should not, however, be so large as to be too heavy for a small child to handle, and it is very important to note that, in an enlarged model, there should not be much more than $\frac{1}{2}$in. gap between the toe of one foot and the heel preceding it. Otherwise the wheel will always be catching in the ground and the toy refuse to 'trot'. An extra foot might therefore be required.

However, assuming the model is made the same size as the pattern sheet, the parts should be traced on to plain paper and these pasted down on to the wood, unless the wood is light and clear enough to take the tracing direct. Those who intend making several models should make cut-out cardboard templates so that a pencil can be passed round quickly. You can also use strong smooth wall-board instead of wood.

### Cutting Together

It will save a considerable amount of touching-up if the two parts (A) are cut together. Those with fret machines and stout toymaker's saws may even cut the whole three thicknesses together parts (A) and (B). In this case the middle part can be the same shape as the outer and afterwards halved. The middle part can be of solid wood, comparatively soft and therefore easier to cut than $\frac{3}{8}$in. plywood.

Do not forget to bore a small hole where shown. Mark this off when tracing. The wheel (C) must be truly circular on the outside, i.e. the front parts of the soles and on the heels. It may suit some readers to cut circular discs first and shape the feet afterwards.

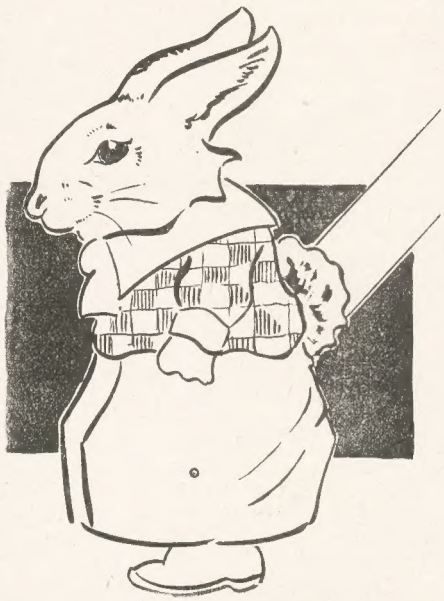
It may be mentioned, as a matter of interest, that it is possible to cut shape (A) from a solid piece of wood about 1in. thick, and afterwards cut away, as though for a bridle joint, a deep recess $\frac{3}{8}$in. wide, to take the wheel. This is done by sawing down with two cuts and then chiselling out the waste. Those who work on a semi-commercial scale, for profit, and have machine tools, might easily mill out the centre part of a solid shape.

The middle part (B) is glued between the outer parts (A), and when the glue has set, any necessary trimming of the edges is done.

### The Handle

The handle is made from a strip about 18in. long and of 1in. by $\frac{3}{8}$in. section. It is not a bad idea, when assembling the parts, to stick, first, the centre part (B) to one of the pieces (A). There will then be a rebate for the end of the handle, at the tail. The handle can be laid in, and the end trimmed off so that it follows the general curve at the bottom. The other piece (A) can be laid over and the whole job clamped up. As there is a strain on the handle, a screw can be driven through at the base of the handle when the whole is assembled.

If, by any chance, the model is made from a solid piece of wood, a $\frac{1}{2}$in. hole,



about 2in. deep can be bored, at a slant, to take a dowel handle. This handle can be removed for convenience in storing the toy. The handle should have a cross piece at the top. This enables the tiny toddler to get a better grip, and even gives some support when he is learning to walk.

### Bright Colours

Before fitting the wheel, the job might well be painted with gay enamels. For a really good job, give an undercoat paint first.

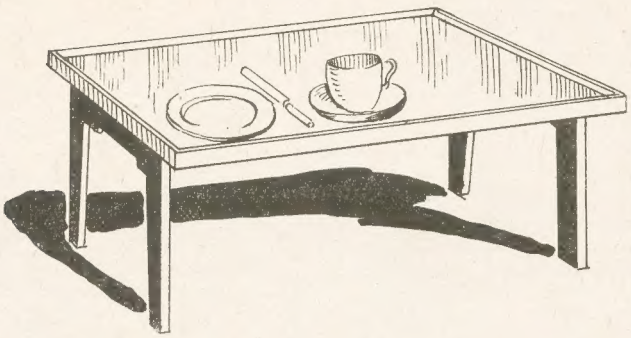
The rabbit's face and paw can be light brown. The tail and collar are white. The jacket is a gay check pattern of, say, red and yellow. The wide, floppy knickers can be blue. Use brilliant colours with no subtle shading off. The feet can be dark blue or black. The eye markings and whiskers, etc., are put on when the groundwork has dried. The handle can be bright red.

When the whole has dried, the wheel is fitted in, using a split pin. It is a good idea to use a washer under the head, on either side of the disc, and under the turned-down ends of the split pin. You can get washers and split pins at any ironmongers.

***In our issue of Jan. 25th, the model of the Pretoria Castle was mentioned as a liner belonging to the P & O Line. This, of course, should have been the Union-Castle Line as mentioned on the design sheet. Further copies of this pattern sheet (No. 242 Special) are of course still available, price 9d. (post 1d. extra).***

For comfort or for an invalid make this

# COLLAPSIBLE BED TRAY



WE give details here of a useful form of bed table; very nice when a light breakfast is wanted in bed. It is very convenient, too, and takes up but little space when not in use, because the legs can be folded underneath. In fact, in this respect it could well be used as a tray for the ordinary serving of meals.

The overall size of the tray is 22¾ins. long by 12¾ins. wide and when the legs are raised it stands about 11ins. from the surface of the bed. Economy of wood has been studied in the designing of the tray top, and instead of having a solid thick piece for this, we have suggested a framework of five rails halved together at the crossings and firmly glued and screwed.

Upon this a square of fibre board or plywood, if the latter can be got, is firmly glued and screwed on. To form an edging to the tray, and to make a presentable appearance all round, we have introduced strips of wood 1⅛ins. by ⅜in. in section to be screwed on. The strips are rounded neatly on the top edges and should be mitred at the four corners.

### Railed Edging

Looking at Fig. 1 we see the plan of the tray, showing the position of the rails underneath by dotted lines. All the rails are 1½ins. by ½in. in section, and in making the halvings, etc., care must be taken in the marking out to get the rails square. The tenon saw will be found useful in cutting the halving, a ¼in. chisel being used, perhaps, in certain places to clear away and make clean edges.

When gluing the joints and before the screws are put in, test the frame with a square. In Fig. 2 a cross section of the table is given with an inset detail showing the construction of the top frame. Here also is shown the method of holding the legs of the table rigid when they are erected.

A block of wood measuring about 3ins. long by 2½ins. wide and ½in. thick is glued and screwed firmly to the middle cross rail of the top frame, and to this is fixed a strip of bendable wood such as hickory.

The legs, if fixed in the position shown in Fig. 2, that is, flush with the ends of the tray, will require the spring strip to be 21ins. long, and it might be about 1½ins. wide by 3/16in. or ¼in. in thickness.

### The Legs

The legs are made to the detail shown in Fig. 3. Each pair consist of legs 10ins. long by 1¾ins. wide and ½in. or ⅝in. thick, and a cross rail 10ins. long, 2½ins. wide and similar in thickness to the legs. The three members are halved together, as in the detail Fig. 4, and it will be noted that the legs are tapered down to 1in. at the foot for a length of 7½ins., that is from the bottom edge of the cross rail.

This latter rail is lightened in appearance by cutting away, as shown. Also a square notch is cut in the middle of the rail for the hickory strip to snap into when the legs are opened, see detail in Fig. 4, and cross section Fig. 2.

### Satisfactory Joint

Be sure and make a sound joint between the two legs and the top cross rail, keep the halvings clean, and even, and glue and cramp well together and add two countersunk screws to each leg joint. The legs are hinged to the top frame with a pair of back-flap hinges, as shown in the circled detail in Fig. 4.

When it is desired to lower the legs flat against the top, the hickory spring, on each side of its centre, is raised out of its notches and the legs thus lowered, the spring eventually lying flat on the wide surfaces of the leg rails.

The whole article when completed may be either painted or stained and varnished, the former being, perhaps, the most suitable finish for this type of article. The table top would service well if covered with either rexine or American oil cloth.

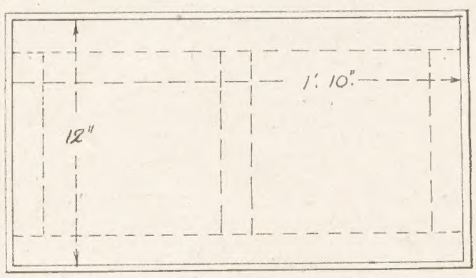



Fig. 1—Plan of the baseboard portion

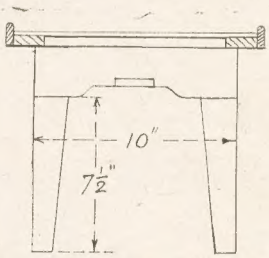



Fig. 3—End view, with legs open

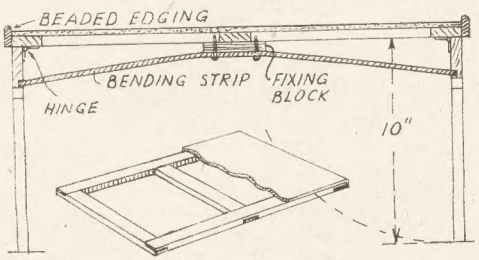



Fig. 2—Side section and detail of framework

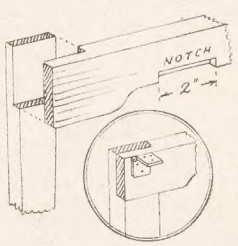



Fig. 4—Joints for strength

**Model Railways**—(*Continued from page* 308)

Care must be taken to ensure that the twisted ends of bare flex do not touch the sleepers or running-rails, as this would cause a short-circuit which would quickly run the accumulators down, or would burn out the transformer if the railway is being run from the main house-supply.

It must be clearly understood that neither of these methods will produce such perfect track as the purchased article—from a spectacular angle, but will give a good, trouble-free layout if carried out with due care and attention to details.

No doubt the reader will himself be able to improve considerably on the schemes outlined by sectionalizing the third rail as already explained in a previous article in this series, thereby still further improving the operational facilities which are the great feature of electrically-driven Model Railways. He should at least have a try at it.

Radio enthusiasts will find it worth while to make

# A MULTIRANGE METER

TO the radio enthusiast, a meter covering several ranges is a handy piece of equipment. Such a meter can be made, both accurately and cheaply, by anyone with a small knowledge of electricity. The meter itself can be obtained from most Government Surplus Stores at a low price; the one in this model was 6s. 6d.

The resistance of the meter is 100Ω and a full scale deflection (F.S.D.) of 1 milliamp. The scale is marked from 0-1·5, 0-3, and 0-150. This can be taken as volts or milliamps, whichever range is in use. The theoretical circuit is shown in Fig. 1, while Fig. 2 shows a suggested lay-out of the parts.

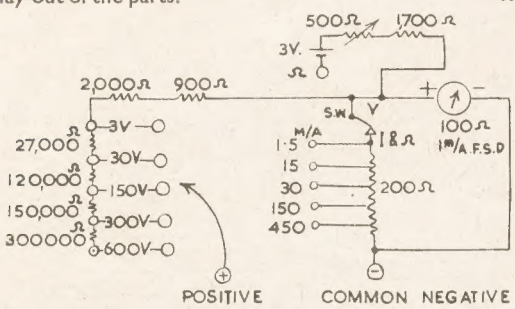



Fig. 1—The theoretical circuit

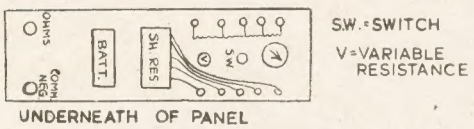



Fig. 2—Lay out of panel

Let us first deal with the voltage ranges. The resistance of the meter is 100Ω and the current necessary for a F.S.D. is ·001 A. Therefore, if we wish to measure 3 volts, we must add a resistance in series with the meter, of a value so that when 3 V. is applied across the meter and resistance, a current of ·001 A. flows in the circuit. The value of this resistance is given by ohms law.

$$\text{RESISTANCE} = \frac{\text{VOLTS}}{\text{AMPS.}}$$

$$\text{In this case } R = \frac{3}{\cdot 001} = 3{,}000 \text{ ohms.}$$

As we already have 100Ω in the meter itself, we only require 2,900Ω in series to measure 3 V. The other voltage ranges are worked out in exactly the same manner, always taking away from the resultant figure, the number of ohms already in the circuit.

### Accuracy

These series resistances should be of the type produced for meters, and accurate to within 1%. Ordinary resistances have a tolerance of 20% and are not suitable for meters, as the readings shown by the meter, may as a result, be in error up to 20%.

The current ranges are somewhat different, in as much that all the resistances are in parallel with the meter. First of all, we must correct our scale, because although the F.S.D. is 1 M/A, the scale shows 1·5 M/A. This can be done by connecting a resistance in parallel across the meter, thus making the F.S.D. 1·5 M/A. The value of this resistance can be found by the following formula:—

$$\text{Shunt Resistance} = \frac{\text{Resistance of meter}}{n-1}$$

where n = the number of times it is required to multiply the F.S.D.

In our case we wish to multiply the F.S.D. by 1·5.

$$\therefore \text{Shunt res.} = \frac{100}{1\cdot5-1} = \frac{100}{\cdot5} = \frac{1{,}000}{5} = 200\Omega$$

This resistance can be made by purchasing some resistance wire. A 200Ω wire wound resistance would be suitable. Care should be taken to see the wire will carry 450 M/A safely, and also that it is of a good length, say, about 10yds., so the tapping points can be made accurately. It will be a simple matter to check that the 200Ω resistance is of the correct value, by connecting a battery through a suitable variable resistance to the meter, so that a current of 1 M/A is flowing in the circuit. If the shunt is connected across the meter, the reading on the scale will now drop back to the position marked 1 M/A, if the resistance is correct. Any error can be corrected by lengthening or shortening the resistance wire.

### Tappings

The tapping points can be found as follows: Connect up the meter as shown in Fig. 3. Adjust the variable resistance until 1·5 M/A is shown on the meter. This point is the 1·5 M/A tapping at the top of the 200Ω resistance. Now slide the wandering lead (marked with the arrow) down the 200Ω resistance until the meter shows ·15 M/A on the scale. This point is the 1·5 M/A tapping Leaving the wandering lead connected to this point, adjust the variable resistance until the meter shows 15 M/A.

Now slide the wandering lead down the 200Ω resistance again, until the meter shows 7·5 M/A on the scale. This is the 30 M/A tapping. Leave the wandering lead connected to this point, adjust the variable resistance, until the meter shows 30 M/A. Now slide the wandering lead down the 200Ω resistance again until the meter reduces the reading to 6 M/A on the scale. This is the 150 M/A tapping.

Finally, leaving the wandering lead connected at this point, adjust the variable resistance until the meter shows 150 M/A. Again slide the wandering lead down the 200Ω resistance until the meter reduces the reading to 50 M/A on the scale. This is the 450 M/A tapping.

### Simple Winding

The easiest way to do the tappings is to wind the 200Ω resistance temporarily round four nails, driven into a large board. Connect up, and when the tappings are made, check that each tapping is well insulated. Then rewind on a convenient size former. The resistance range is also quite straightforward. The meter resistance is 100Ω and with 200Ω in parallel, makes a total resistance of:—

$$\frac{1}{100}+\frac{1}{200}=\frac{2-1}{200}=\frac{3}{200}=\frac{200}{3}=66{\cdot}6\Omega$$

With a 3 V. battery, the resistance required to give a F.S.D.

$$=R=\frac{\text{VOLTS}}{\text{AMPS}}=\frac{3}{\cdot 0015}=2{,}000\,\Omega$$

The 500Ω variable resistance is to allow for slight difference of the voltage of the

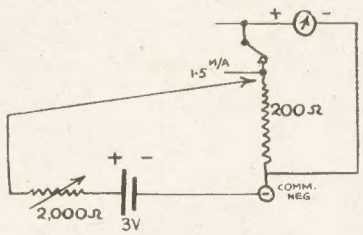



Fig. 3—Connecting for tapping

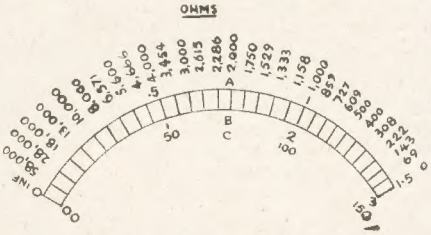



Fig. 4—Adding the scale to the meter

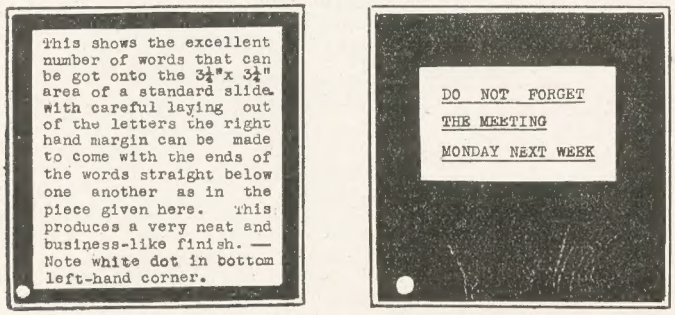
battery, as it runs down.

To use the resistance range, connect + wandering lead to the ohms terminal, short circuit + and — testing leads and adjust variable resistance until a full scale deflection is obtained. Then, without touching the setting of the scale, connect the unknown resistance between the

(Continued foot of page 312)

# Magic lantern announcements can be made with HOME-MADE 'LINE' SLIDES

MANY readers will probably have a 'magic lantern' (or more correctly 'optical lantern') of one sort or another. Perhaps one that has been constructed from the several designs that have appeared in Hobbies Weekly, or maybe a film-strip instrument, or possibly one that projects the standard 3¼ins. square slide.




**Examples of two forms of announcement**

Whatever kind it is, it is often good to be able to produce diagram or word slides yourself, for most lanternists find that occasions arise when such slides are of the utmost value. Thus, if the lantern is used greatly at a club or class, it is not hard to see how useful it would be to be able to flash on a notice on the screen, say, about the next meeting.

Years ago, 'line' slides could only be made by tediously coating glass with some preparation which made ink 'take', or using ground-glass (upon which marks can be put with a pencil), but this cut off a lot of light and made the screen dark.

### Transparent Base

Now, however, we have Cellophane, which is an ideal base, if the lines can be made dark enough. Being glossy, however, this useful material will not take every writing medium well, but it can be satisfactorily marked with carbon paper, if the carbons are placed on both sides.

Typing is a most convenient way of making a slide containing a notice, because quite a number of words can be got into the limited space. The illustration shows the large number of words that can be worked into the standard (slightly masked) 3¼ins. square. Lettering, etc., however, can be put on quite well if done with a sharp hard pencil, the words being written on the carbon sandwich instead of typed.

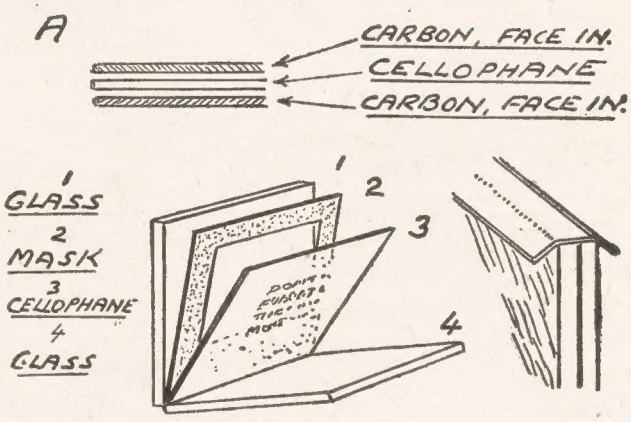
To make a slide, place a bottom carbon *face up*, then the Cellophane and then another carbon *face down* on top. The carbons should be new and for the top carbon it is best to use one with a light-coloured back upon which the square or other shape in question can be lightly pencilled, otherwise it is not too easy to see the area being filled, and the placing of a further sheet of plain paper on top tends to weaken the carbon marks.

When the typing or writing is completed, a suitable mask is prepared from black paper, and the Cellophane with the mask is placed between two cleaned-off slides, or two pieces of ready-cut cover glass. The point is that the two glasses must be perfectly clean.

### Binding

Before finally binding, if the slide is the standard 3¼ins. by 3¼ins., put a small white dot in the bottom left-hand corner as indicated. This is to make it agree with other slides, the dot showing which way in the carrier the slide has to go.

The sandwich of glass, Cellophane and mask is completed by binding round the edges with narrow strips of gummed paper, care being taken not to smudge the carbon marks while making up the slide.




**Making up the slide** **Binding strips**

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**Multirange Meter**—(*Continued from page* 311)

+ and — testing leads, thus breaking the short circuit. A certain current will be shown on the meter. This current is called I2. Thence by the formula:—

$$Rx = \frac{(R + RM) \times (I1 - I2)}{I2} - Rx$$

$$= \frac{2{,}000 \times (1{\cdot}5 - I2)}{I2}$$

the unknown resistance can be found.

It is important that no other source of current flows through the unknown resistance while under test. The resistance range will measure from 0—58,000 ohms. The upper figure is based on the assumption that the meter can be read accurately down to 0·05 M/A, that is, 1/30th of full scale.

### A Marked Meter

Fig. 4 shows the layout of the scale as already marked on the meter used in this model. The resistance scale can be added as shown, but care must be taken to make this a neat job. Some readers may not like to chance spoiling the scale. If this is the case, you can either draw a copy of the scale, and fix it in the lid of the box containing the finished meter, and refer to it when measuring resistance. Or a table can be drawn up, giving the different values of resistances for a given deflection on the meter, and also kept in the lid.

When measuring volts or milliamps on a range that is not marked on the scale, it is quite an easy matter to multiply the given scales, to correspond with the range in use. For example, on the 30 V. range multiply scale B by 10, and on the 15 M/A range, multiply scale A by 10.

The idea of a switch in the 200Ω parallel resistance circuit is to give greater accuracy on the voltage ranges, i.e., 1,000Ω per volt.

### Box Fitting

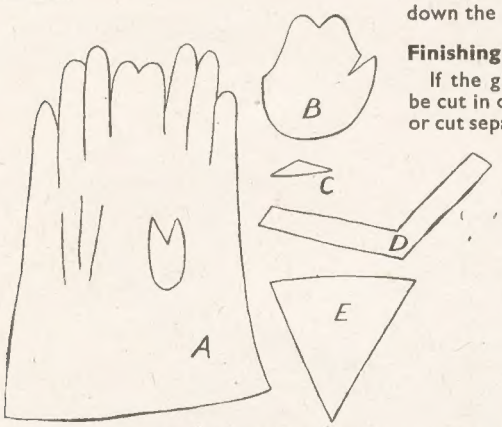
All the parts can be mounted under a panel, leaving only the meter dial, terminals, switch and variable resistance control visible on top. The panel can then be mounted in a suitable box of appropriate dimensions. This container can be finished neatly with polish or varnish to make it an attractive piece of work you may be proud to use and show to your friends.

For garden or general use undertake your own

# SIMPLE GLOVE MAKING

IT is commonly supposed by most people that glove making is a very intricate and difficult task, but this is by no means true. The most important thing is to obtain a good pattern and cut the pieces out exactly.

Handmade gloves if properly done will outlast all machine-made ones. Various grades of chamois leather can be used—it is fairly thin, and easier to sew. When selecting, and buying the leather hold it up to the light to see that it is not too thin.




The parts are—handpiece (A), thumb (B), quirk (C), fourchette (D) and gauntlet gusset (E)

You should purchase your first pattern in the size you require. There are eight pieces to an ordinary slip-on glove—the hand, the thumb, three fourchettes, and three quirks. For a large gauntlet glove, a triangular gusset is used and sewn in below the wrist.

### Cutting Out

The piece of leather to be used should be pinned out on to a board or table so that it lies flat. The pattern is placed on, so the breadth of the leather, or the most elastic part goes across the width of the hand. Draw round the edge of the pattern with a finely pointed pencil, and then cut round it, making sure that you keep exactly to the line.

### Stitching

The thread used for stitching is mercerized size No. 8. You can obtain special three-sided needles for sewing leather, but if your pieces are of ordinary thickness you can use a sewing needle.

The general stitch to be used is a running stitch, which must be nice and even to ensure a perfect finish.

Over-stitching can also be used effectively.

### Making Up

The three marks on the back of the hand should be sewn first. These are made in the form of three small tucks. Then sew in the thumb piece. Usually the pattern has numbers at various points on the hand and thumb pieces. Place these numbers correspondingly together.

Begin sewing with a small knot at the back at No. 1, and sew right round. The quirk is sewn into the angle of the fourchette on the wrong side.

The fourchette goes to the back of the fingers, with the quirk on the inside. Begin sewing at the base, and when nearly to the top, cut the top of the fourchette to fit the side of the finger.

When all the fingers are sewn, stitch down the side of the glove.

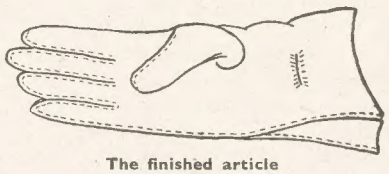
### Finishing

If the glove pattern is gauntlet it can be cut in one with the hand of the glove, or cut separately and stitched on.


How fourchette is added

If desired a length of elastic can be put in the wrist to produce a tight fit. The elastic is stitched on in a zig-zag fashion or line of stitches, whilst it is stretched to its fullest extent.

For fastening the glove around your wrist you can use either a press-stud by itself or a press-stud fixed to a small narrow strap running around the wrist of the glove.

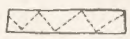


The finished article

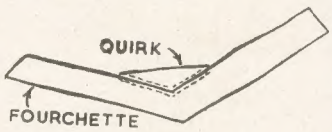
### Fancy Gloves

To make the gauntlet more decorative you can cut a fringe around the edge, or thread different coloured things through small holes. Another way is to punch or cut small designs in the gauntlet.

Completed thumb



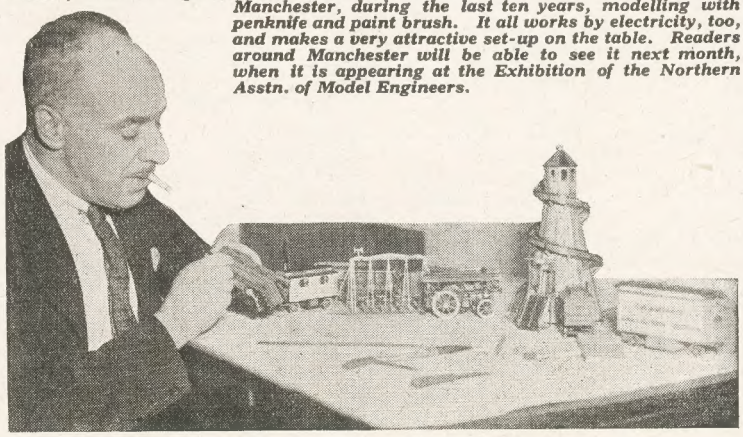
Elastic wrist band




Patterns for gloves can be purchased along with needles, and the mercerized thread in most Needlework Shops. Chamois leather or wash leather used mostly for gloves can be obtained at leather shops or Handicrafts shops.

## A Table-Top Fairground

*THE suggestions in our pages cover nearly everything, and offer endless ideas to the craftsman. Look at this ingenious and attractive piece of work— a complete fair, with all the detail and colour of 40 years ago—swings, roundabouts, helter-skelter, traction engine, caravans, etc. It has been made by Mr. M. Arthur of Manchester, during the last ten years, modelling with penknife and paint brush. It all works by electricity, too, and makes a very attractive set-up on the table. Readers around Manchester will be able to see it next month, when it is appearing at the Exhibition of the Northern Asstn. of Model Engineers.*



*Photo—Daily Graphic*

Helpful jobs for the housewife can be performed with a little

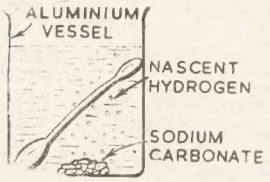
# HOME CHEMISTRY

WITH a knowledge of certain basic facts of chemistry you can derive a great deal more value from the various hints and tips given in the different household magazines than if you just carry out their instructions. The man with a little chemistry in his head can be of real use in the home.

For instance, except in the heart of the country our atmosphere is always polluted with, among other things, sulphur compounds which attack such things as silverware, forming silver sulphide. It is the film of silver sulphide that is usually called tarnish.

### Cleaning Silverware

Now this film is very difficult to remove without harming the silver underneath, but it can be done if you know a bit of chemistry. Furthermore, you can apply the same method in any other case where you suspect sulphur staining.




**Removing tarnish from silverware**

Take an old aluminium vessel that has ceased to be of proper use and place your tarnished silverware in it. Cover with water and bring to the boil. When the water is boiling vigorously add solid washing soda (2ozs. to each ½ gallon of water) and continue boiling for a few minutes. Then, when you have washed the silverware in warm soapy water, it will be as bright as new.

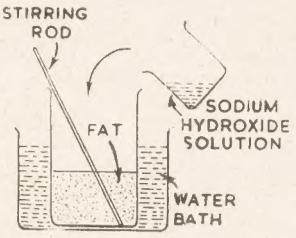
The washing soda (sodium carbonate) reacts with the aluminium vessel and forms a very reactive kind of hydrogen called 'nascent' hydrogen. This attacks the silver sulphide and turns it into hydrogen sulphide which passes off as a gas, leaving the silver untarnished.

### Kettle 'Fur'

You probably know that one way to clean the fur from a kettle is to stand it with dilute vinegar overnight. No doubt you could make more use of this knowledge if you knew the chemistry behind it all.

Ordinary tap water contains calcium carbonate, formed when rain seeps through limestone deposits, and this is one of the very few substances whose solubility decreases with rise of temperature. That is, it is more soluble in cold water than it is in hot water. Of course, in any sample of tap water there are only a few parts per million of calcium carbonate. But each time you boil a kettlefull a very thin film forms on the inside until at last an appreciable deposit is present.

Now, as you know from your analysis, all carbonates react with acids, giving off carbon dioxide. Vinegar contains acetic acid and this reacts with the kettle fur giving carbon dioxide and calcium acetate—which is soluble in water and is poured away when you rinse out the vinegar. Of course, any other acid is just as good, but it must be dilute or it will attack the kettle itself.




**Increasing the fat allowance**

### Making Fat from Waste

A very useful piece of chemistry to know these days is how to make soap from waste fat. Only a crude liquid soap can be made under domestic conditions but it is quite suitable for rough cleansing and laundering.

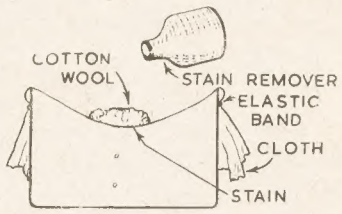
Take your waste fat—animal fat, cooked or uncooked, rancid butter or margarine—and melt it down in a vessel of hot water. Then, in a glass vessel dissolve in a *little* warm water 2½ozs. of sodium hydroxide (caustic soda) for every pound of fat. When the fat is nice and hot, pour in the sodium hydroxide solution drop by drop with continuous stirring.

Continue heating, stirring occasionally, until the mixture turns milky. Then take a little of it and dilute with water. If it goes clear, the soap is finished, but if it does not you must go on heating until it does.

Fats consist of compounds of 'fatty acids' and glycerine called glycerides. When these are heated with sodium hydroxide they split up and give sodium salts of the fatty acids, and glycerine. The glycerine dissolves in the water so you do not see it. If you like you need not use water. Add solid sodium hydroxide; it will take longer but then you will get a solid soap floating above a quantity of glycerine.

### Stain Removal Hints

Now, just a few words on stains to finish up. The principle behind nearly all stain removing is to convert the coloured stain into a colourless compound. In a few cases you do try to *remove* the stain—as with cocoa which dissolves in alkali (ammonia, for example)—but mainly you leave it there in a form you cannot see!




**How to remove stains**

Remember that most coloured compounds found in fruit form colourless borates. So you are almost certain to remove a fruit stain by using borax. With all stains the best method is to drape the stained cloth over a jar, fasten with a rubber band and then pour on the stain remover. Place a piece of absorbent cotton wool on the cloth and soak this with stain remover, too.

### Ink Erasers

For ink stains use oxalic acid or citric acid (lemon juice). Red ink usually succumbs to ammonia. Citric acid can be used too, to decolorize iron mould caused by rusty metal. In both these cases, blue ink and iron mould, it forms iron citrate which is colourless.

## Radio Gram Conversion

*PLEASE explain conversion of a cabinet gramophone into a micro-gram. The type I have at present has a radio pick-up installed, but I wish to convert it to play through its own speaker.* (*F.H.—York*).

TO play records in the way you suggest, you will need to use an amplifier, and various types of amplifiers have been described in various past issues of 'Hobbies Weekly', both mains and battery operated. Though one valve in an efficient circuit will give reasonable volume for domestic purposes, at least two valves are preferable. A complete amplifier of this type requires very few parts, especially if battery-operated.

Construction should present no difficulties. It is necessary that the speaker be mounted on a suitable baffle-board with hole of appropriate size, and this can probably be screwed in the position previously occupied by the trumpet-horn. For convenience, the volume and tone controls may be mounted on the motor-board near the turntable, and the amplifier can go behind the speaker.

It is best that the cabinet lid should close over the turntable to reduce needle-scratch when playing a record.

# What to look for and avoid for good pictures in FEBRUARY PHOTOS

TO the many all-the-year-round amateur photographers it is always a matter of great surprise that they constitute only a small percentage of the camera-owners in this country. It is computed by those who are in a favourable position to judge that some 90 per cent of the total number, and this runs into millions, of cameras are never used for making exposures between the months of October and March.

The possessors, in many instances, must be aware that there are beauty spots of real photographic value to be found in the fields, lanes and villages even in the depth of winter. Most certainly there are plenty of places and objects of interest in the towns and cities in which they live and work. It should need only a slight amount of enthusiasm to re-awaken a desire to get another spool and make a few shots.

### Spring Rambles

A good way to conceive this spot of enthusiasm is to get a friend to take you to the local camera club one evening when there is a lecture or practical demonstration to be given. Or, perhaps, the club may be holding its annual exhibition. Whatever the programme may happen to be you are certain to be struck by the keenness of the members and the fact that very few of their cameras are ever allowed to remain idle for long.

Very shortly the bright days of spring will be urging us to get out for a ramble. Will you have the camera ready with a spool of film or have you forgotten to get one? One very important point to remember is that at this time of the year it is often much easier to get a supply of films than at Easter or later.

Sun and tree bareness made to help a picture

The approach of Spring is a time when all country places are full of opportunities and pictorial subjects fairly easy to find. Even the town dweller who, because of his work or other circumstances is unable to get to the open country in time to make many exposures, can do a little prospecting locally among the old buildings and similar places. Even in the market place or some of the busy side streets during the lunch hour a few shots might be made.

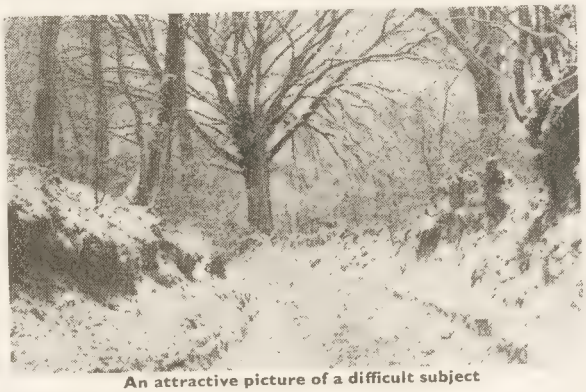
In any case, it is useful to walk around noting how such-and-such a spot would look if the lighting was from the opposite direction, or if there was a splash of sunshine on that side of the building and the shadow was a little less pronounced. By making use of such thoughts you will unconsciously be drilling yourself and gaining some very valuable help in selecting the right lighting and position. And most surely you will find that you are taking advantage of sunshine and shadow or light and shade as some prefer to term it.

Sunshine and shadow are two of the most important factors in the art of picture-making. Whether you are a beginner or expert specialising in Landscapes, Street Scenes, Architectural Subjects, River or Lake or in any other subject, these two factors demand attention. They have a great influence in all pictorial work, oil and watercolour, etching and sketching, as well as all branches of our hobby of photography. The more we study these influences the greater use we shall make of them and the better and quicker our work will progress.

Sunshine and shadow make for contrasts. As it is important that contrasts should not be too strong, it is necessary to do our picture-making when the sun is not at its brightest. Also when some detail can be seen in the shadows and is possible of reproduction in the negative.

If a particular church or cottage or any other object which would serve a useful purpose in a view, looks too prominent at midday, take a look at the same view in the early morning, or about 3 o' clock in the afternoon, when the sun is not so brilliant and when there may be a white cloud or two.

That is a very simple illustration of the type of training everyone must be prepared to do if desirous of producing some really first class exhibition or competition results. It must also be recognised that making oneself familiar with the effects of light and shade does have a very strong influence on the eye when seeking the truly pictorial either in nature or in the handiwork of man such as beautiful architecture.



An attractive picture of a difficult subject

The reference to architecture reminds one of the wonderful effects caused by the play of sunshine through the windows of a glorious cathedral. How it will reveal the carving in wood or stone, or show up the delightful and beautiful designing of pillars and arches, and even produce a soft contrast with the dark woodwork of the roof.

### Church Work

Several years ago one of our leading amateur photographers entered a remarkable picture in a popular exhibition. The title was something like 'Till the Day Breaks' and it showed a tomb of a bishop with a full-length and very life-like statue of the dignitary in his robes and lying on the top of the tomb. The whole of the structure was in marble and very outstanding because of its beauty. The photographer, however, had, doubtless, waited his opportunity, for when he made the exposure, a splendid beam of sunlight was pouring through a window on the other side of the aisle and completely enveloped the figure. That ray of sunshine made the picture one of the most successful of the year, for it was reproduced in many journals.

Another feature, common to this period of the year, which is distinctly helpful in the construction and composition of our pictures is that many of our trees are void, or almost so, of foliage. This must not be regarded altogether as detrimental.

It really means that instead of being reproduced as masses of heavy shadows they will appear with more detail and with a fair splashing of soft light sepa-

rating the branches and displaying the outlines of the trees. Possibly a few Elms may be close at hand to give an added charm by means of their delicate twigs looking like so much filagree work. Sunshine in the early morning, or after a frost, and while the twigs are still wet is certainly worth while picking out with the camera. So also are the rays of the sun piercing the mist between the trees.

### Trees and Buildings

A valuable prize was recently won in a competition held by one of our seaside towns by a picture taken of a medium size tree without a single leaf. The artist had secured an exposure just as the sun was throwing a perfect pattern of the tree across a large patch of grass and showing a shadowy tracery of other trees on the trunk of the one in the picture. The photographer certainly made excellent use of sunshine and shadow in this instance.

Mention has already been made of buildings and street scenes and while this may not seem a very exciting or full subject to the beginner, yet with a little concentration and a quick eye for the 'unusual' it is not such a dull one as would appear. It is a good plan to do a little 'rehearsing' by taking up a position in a busy marketing place and noting items and incidents among the passers-by which possibly could be turned into snaps. Do not take anything and everything that comes along. In fact, do not worry if the time proves a blank. Your object is to test the neighbourhood for any subject that may be good if the lighting was right.

### Persistence Pays

The author remembers a certain street in an old town which made him go there at least eight or nine times before getting what was wanted. Altogether he must have spent an hour seeking the right position and waiting for the right light effect. But patience was eventually rewarded, for on going there one day at about 1.30 p.m. the street was empty, folks had gone to lunch, and there was a beautiful white cloud over the main building at the other end. The emptiness, cloud, and the light made the picture.

Sometimes a wet pavement and roadway after a good shower will provide some very charming reflections of a church or other building, or even of a street trader's stall. It is possible to get something that is definitely 'unusual' even while rain is still coming down. It is easy enough to stand in a doorway of a shop and watch your opportunity. This is what is meant by 'rehearsing', it is just another stage of the training mentioned already.

### Snow Disappointment

It is always well at this time of the year to have the camera loaded because it sometimes happens that a fall of snow occurs at night. To get the best effects an early visit must be made to the most likely spots for securing one or two exposures before the snow has been trampled or melted into a semi-liquid mess.

Snow scenes are not the easiest of subjects, for unless there is some sunshine and shadows the results are inclined to be very disappointing. The masses of white require to be broken up, if not by shadows then by something that in the photograph will serve as half-tones or gradations between the white and, perhaps, the black trunks of trees.

The illustration on the previous page show the effect of snow early one morning in February. It was not enough to cover completely the woodland paths and during that morning the sun refused to shine, but the whiteness was sufficiently broken by small heaps of leaves on the tracks and little dark clumps on the banks and waysides as to make it quite worth while to make one or two exposures to get such pictures.

### Quality Work

It will be recognised by all our readers that this article has dealt specifically with a feature of photographic work rather more advanced than the ordinary 'snapshot' stage. But it is not beyond the scope of anyone who is prepared to make use of the suggestions put forward. The result of making use of sunshine and shadow, whenever a suitable opportunity serves, will, undoubtedly, mean an advance in the quality of the work, which should be the desire of each of us.

We must help the camera to do its work well. The painter has to learn to mix his paints to the best advantage, and we must learn to press the trigger when the lighting and all other details are just right if we wish to capture a real picture.

# A Home-made Floor Polisher

*FROM plywood or deal board about ½in. in thickness cut several pieces about 8ins. by 10ins. to comprise a total of 1½ins. These pieces should be glued and screwed together, and the bottom face planed flat, if deal board is used. At each end on the top glue and screw 8in. pieces of ½in. square ply or wood, as shown. From Meccano, Trix, Juneero or similar strip metal of about 3in. width, make two 'U' shaped bars, as at (A). Screw these on at the ends of the wood block, allowing about 1in. between the strips and the ½in. square pieces of wood, so that the strips can be moved, as seen in Fig. 2. Now form a stirrup from wood (Fig. 3), and screw it securely to the centre of the top of the polisher. An ordinary broom handle is drilled through about 1in. from the bottom, and fitted to the stirrup with a thin bolt, a nail, or length of heavy gauge wire. This latter should fit tightly into each leg of the stirrup, but the broom handle should swivel freely on it. If the polisher is not sufficiently heavy, screw lead or scrap-iron plates on top. Or build two shallow plywood boxes, and put a small cloth bag, full of sand, in each, before nailing on the lid. A length of rubber draught-stop strip, nailed round the block, will prevent any damage to furniture, should the polisher bump into it. A coat of paint will make the whole thing smarter, and a piece of old blanket or thick polishing rag renders it ready for use, the ends being secured by pulling the metal clips outwards, slipping the rag under, then pressing the clips to the upright position.*

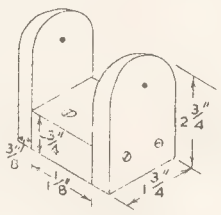


Fig. 3

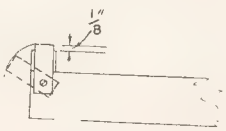


Fig. 2

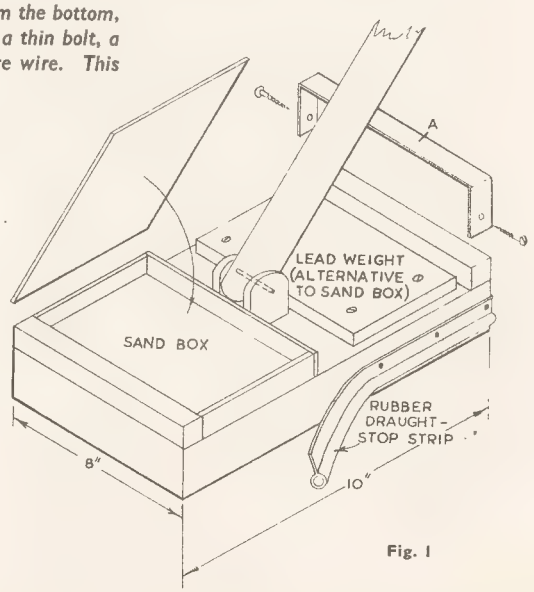


Fig. 1

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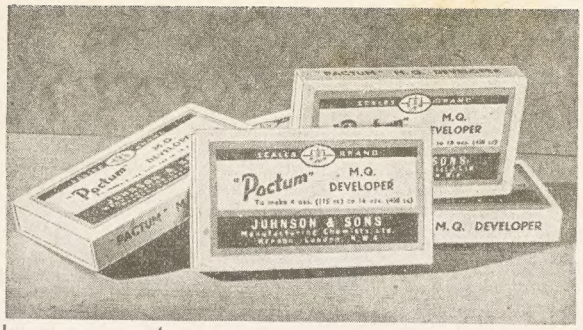


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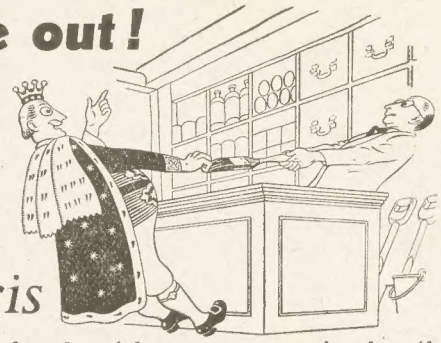

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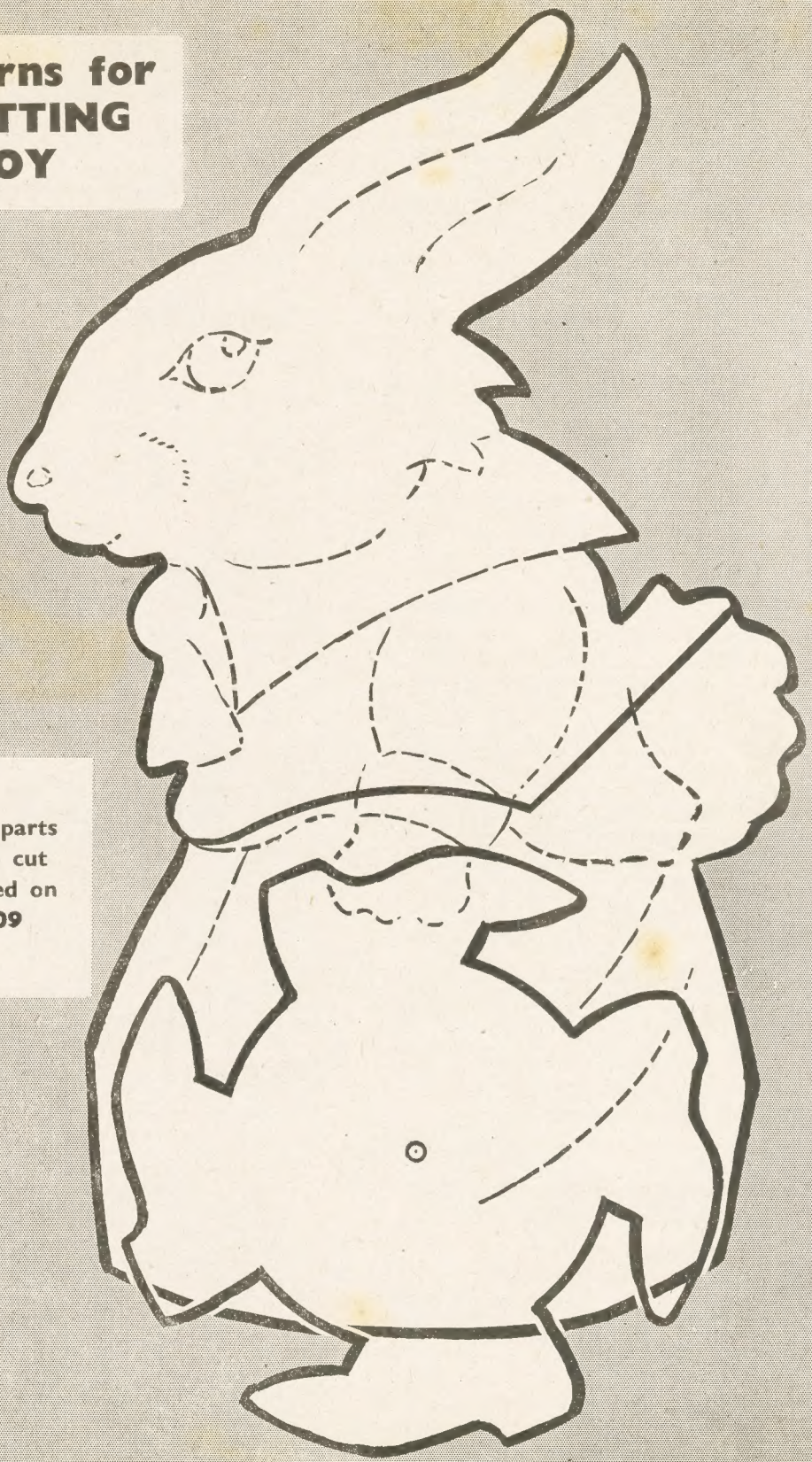
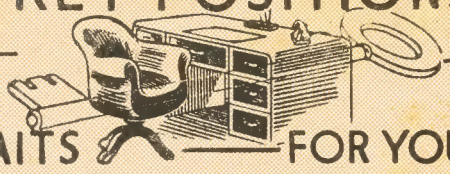


How the parts are to be cut is explained on page **309**

# A KEY POSITION..



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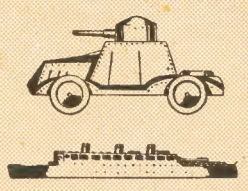

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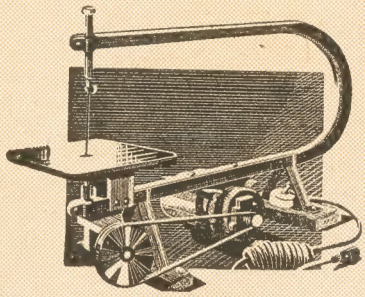

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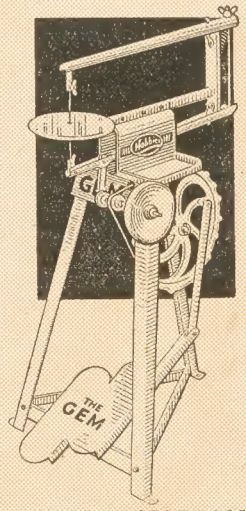


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